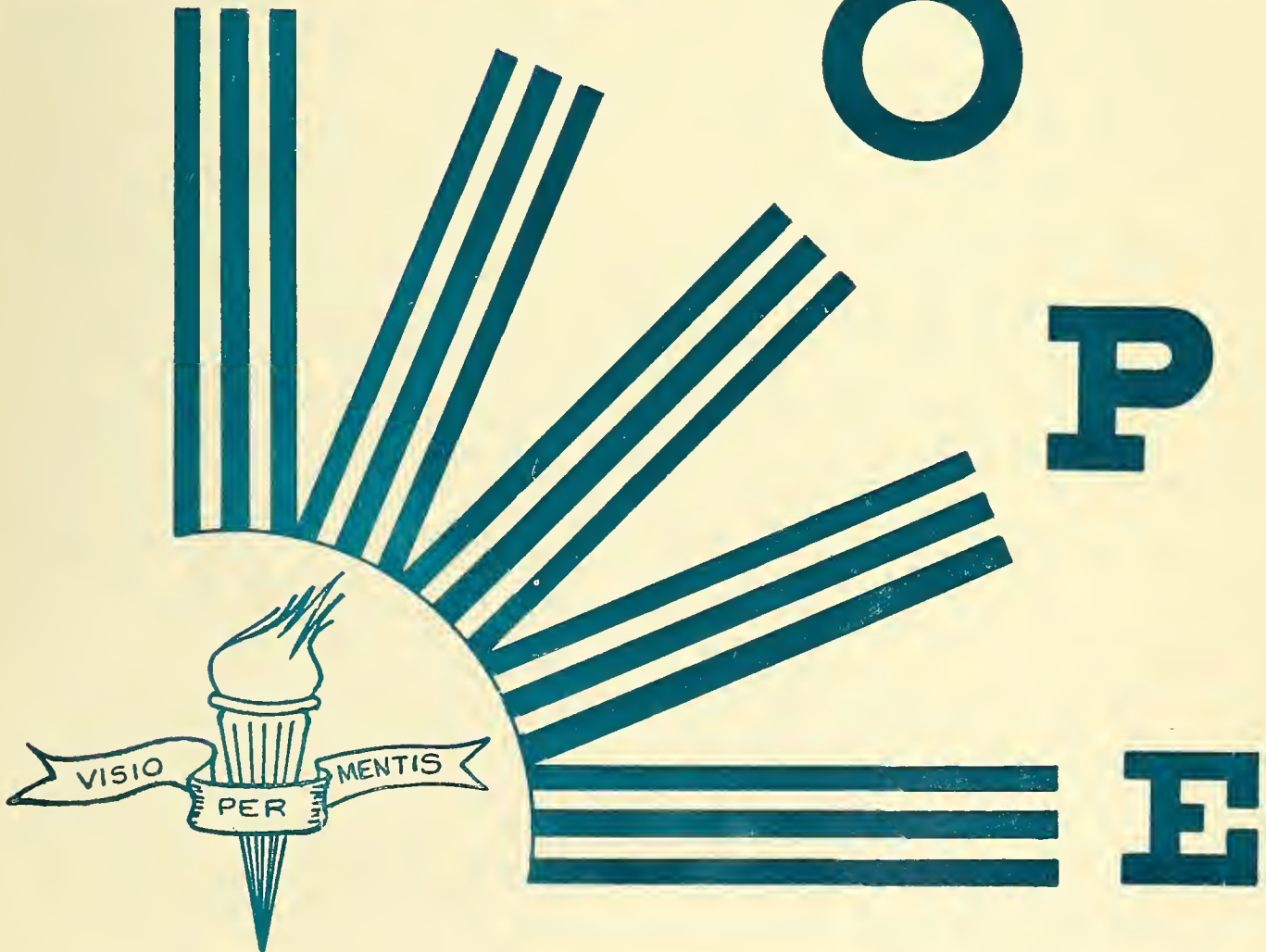


THE

SCOPE

*October-November, 1959*



PUBLISHED BY THE STUDENTS OF THE MASSACHUSETTS COLLEGE OF OPTOMETRY



# THE SCOPE

OFFICIAL UNDERGRADUATE PUBLICATION OF

Massachusetts College of Optometry

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BOSTON, MASS., NOVEMBER, 1959

## WIFE'S CLUB NEWS

By Betty Wolmer

And now some news from the wives.

The Wive's Club of M.C.O. commenced the 1959-1960 school year with an Open House early in October to which all wives of M.C.O. students were invited.

The group's main purpose is to enable the wives to become better acquainted and to broaden friendships. Meetings are held every other Monday evening at the home of one of the members. The gatherings are social—a good time to relax, chat, play cards, and to catch up on what's new at M.C.O. This year, we are hoping to go bowling some evening. Also on the agenda is a Christmas party and a guest speaker or two. A very short business meeting is held at each gathering. Dues are used for the Spring Outing, usually held in May on the Sunday following the National Board Examination and prior to final exams. The whole family is invited to this all day outing.

Another "big" event which includes the husbands is the Casserole Supper to be held early in December. Each wife brings

her (or hubby's) favorite dish for this evening of food and fun.

Officers for the first semester of the school year are:

President: Betty Wolmer

Vice-President: Jeanne Prevost

Secretary-Treasurer: Sandra Boll

Every meeting is announced a few days ahead of time on the bulletin board at M.C.O. So husbands, let your wife know when and where the next meeting will be, and let her have a chance to relax and meet the other wives of M.C.O. students. All wives are invited to every meeting of the group, so let her know. We'll be looking for her!

Gerald Cass, sophomore, received the Theodore Klein award at the annual convention of the Optometric Extension Program held at the Hotel Kenmore, October 20. Gerry received this annual award for having the highest average in all the subjects in the first year curriculum. The award was presented by Dean Ralph Green, who addressed the convention.

Starting with the next issue of the Scope a new advertising policy will be initiated. Any student bringing in new advertising will be given 20% of the price of the advertisement as commission. This commission will be received every issue that the advertisement runs and the student is in school. Students interested in this contact Paul White, Donald Saferstein, or Bob Webber for further details.

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## SENIOR CLASS ARTICLE

by Gill Sellars

The Senior Class is best described as that class which speaks in terms of months rather than years. Such was the tone of conversation at our first meeting of the year at suite one, 483 Beacon Street during the course of the meeting, most of the class was informed that they may not make it to graduation as they smoked too much. One member made the sad mistake of entering with a burned out stogie in his hand, and suddenly found himself outside the meeting hall. Ah yes! The annual first meeting of the class in September will certainly be missed in future years.

Ken Varnum and Ronny Clapp tied the matrimonial knot this summer. This gives the class a fifty fifty split in marital status. Joe Strauss returned to school this year after a two year stint with Uncle Sam. Tom Baker returned to school late as he was in the hospital with pneumonia. It is indeed heartening to see Tom feeling better.

The biggest event of the senior year is the day each individual in the class meets that weird species known as "patient." Typically, it was Joe Comalli who had the easiest patients on the first day. Although one left with a noticeable esotropia, Joe swears he had no trouble. Yet it looks as if clinic is going to be a cinch. When asked about her vision, Mrs. X replied, "I don't get enough on the side." After deeply diagnosing this typical ocular manifestation, Charlie Sweeney promptly referred her to Woman's Hospital for further observation. The class is quickly learning that there are certain rules for modifying the distance Rx to insure comfort. For most among these rules is the Kamen's Konstant — reduce the plus by plus three. Carroll Martus and Joe Strauss seem to be losing substantial amount of weight from skipping rope in the orthoptics clinic. Yes it looks as if it is going to be a rather exciting year.

Beginning with the next issue of the Scope, a 5 dollar prize will be awarded to the writer of the best article submitted for each issue. The contest is open to all members of the student body and judgement of the articles will be made by the editors.

## PI OMICRON SIGMA

by Rube Margulis and Sam Kornblatt

There can be no more "Let George do it" phrases heard around this part of the country. One reason is that George Dyer has graduated. However, the basis for our enthusiasm lies in the new slate of officers. The important job of Chancellor was placed in the hands of Gil Sellars, a man with much leadership and general geniality. Our Vice-Chancellor, Carrol Martus, was well chosen for his capabilities as a coordinator. Our new Scribe, Rube Margulis undoubtedly is the epitome of fastidiousness while our new Treasurer Dave Smith is the essence of scrupulousness. An exceptionally conscientious job has been turned in thus far by Harvey Leavitt, our Corresponding Secretary.

All of the brothers are again at the books after a very pleasant summer vacation. Newest additions to the Wives Club are Mrs. Artie Fields, Mrs. Ken Varnum and Mrs. Paul Walcott (the P.O.S. chapter of the Wives Club, that is). Best of luck to the happy couples on behalf of the fraternity. A vote of appreciation is due Carrol Martus for donating his radio to the fraternity room. Plans are being formulated for the P.O.S. - O. E. PHI football game which should prove especially interesting since last year's contest ended in a deadlock. The welcome mat is out for brothers Joe Strauss and Jerry Sandberg who are back in the fold after an extended vacation with Uncle Sam, and to Paul White who is back after a vacation.

Anyone interested in buying a second-hand gas mask, contact Bill Leporati. Ever since Paul Walcott got married and left Leporeti roommate-less, Bill finds he doesn't need it anymore.

As of the moment, plans are being made for our annual Poverty Party, which has been one of the most successful school functions in recent years. The annual Smoker was held at the Roof Room of the Hotel Vendome on October 28th to enable the new students to meet the brothers and to hear some words of wisdom from some illustrious members of the faculty.

There were plenty of laughs, the beer flowed like water, the smokes grew like weeds and at the end of the evening, you felt no pain. The Social Committee under the leadership of Earl Lizotte had done much planning and hard work to assure a success. In the early part of October, P.O.S. celebrated its 47th birthday with a Birthday Party in the fraternity room. All new students were invited to help eat the cake, to meet the brothers and to hear a few words from Dean Green, Chancellor Emeritus of P.O.S.

We'll see you all at the Poverty Party. Watch for the posters announcing the time and place.

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## FIRST YEAR RETROSPECTION

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by Tom Gordon

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By now the members of our class have had a healthy taste of what we can expect for the next four years in optometry college. We are finding out rapidly that relentless work on our part is definitely required.

The class as a whole is fond of M.C.O. and is getting along smoothly with the faculty. This is true even though its rumored about the campus that several members of our class have been afflicted with "writer's-cram" from an anonymous course which meets on Tuesday and Thursday.

The first few weeks at school were spent getting acquainted with the other students. The presence of two fraternities was made obvious on the first day when scouts from each were sent to mingle with the first-year populace. These two fraternal groups aided the confused and timid first year students immeasurably in becoming adjusted to the College.

One of the most prominent functions attended by this group thus far was the O.E. PHI smoker. It was here over a glass of beer that a fellow really had a chance to get to know his fellow classmates. Two of the highlights of the smoker came with the presence of "GUSHER" Greenberg...

need I say more; and the follow-up party at the apartment of Carl Gustafson and our own John George. This class is looking forward to the P.O.S. smoker which will come shortly.

Elections of the first-year class officers were held in a democratic manner and the results are as follows: President, Milt Reisman; Student Council representatives, Vic Gallo and John George; Secretary and Treasurer, Morton Kaplan. I am sure these fellows will do a good job for us, so let's give them all our support.

It may be interesting to note that M.C.O. has a first-year class comprised entirely of bachelors. We're not bragging, but you don't hardly find them no more, nowhere. . . . Another interesting fact is that no member of our class, as yet, has been bitten by the Vespa bug. But, who needs them anyhow when fellows like Paul Dufour can drive to college in a Cadillac. Here is a fellow already enjoying the riches of optometry and he's only been here a couple of months. . . . Bob Honors still maintains that his tired appearance early in the morning is from too much studying and not basketball. . . . Ed Costa is trying to develop a method of taking legible Zoology notes and be able to remember all the enzymes and vitamins.

Well, that over which you readers have just glanced is a sample of our class. We sincerely feel at home at M.C.O. and like the faculty. We are still on friendly terms with Mr. West, even if he did recently give us a "cranium-crusher" of an exam.

Until the next issue its *auf Wiedersehen* from the class of 1963.



Dr. Fredrick Farnum has been named assistant professor of contact lenses and will be in charge of the new contact lens clinic. Assisting him will be Joseph Melikan who has been appointed instructor in contact lenses.

# WHAT HAPPENS WHEN THE CYLINDER AXIS IS WRONG?

by JOSEPH L. PASCAL, M.A., O.D., M.D.

So that the students may better appreciate the value of having accurate axes when prescribing cylinders, the following article showing the effect of incorrect cylinder positioning is being republished from **THE SCOPE** of May, 1955.

In the correction of astigmatism, usually the greatest emphasis is placed on first finding the correct axis of the required cylinder. And rightly so. However, it is revealing if a study is made of the optical and visual effects of a moderately strong cylinder, say a plus 2.00 cyl. is placed, 10 degrees off axis. Suppose the correct Rx is plus 2.00 cyl. ax 90, and a plus 2.00 cyl. ax 80 is placed before the eye, what are the visual and optical conditions created?

In general, an examiner will interpret a patient's reactions far more intelligently if he has a general idea of the effects which are created when a cylinder is 10 degrees off axis. The effects are *not* self-evident, nor can they be obtained by simple arithmetic. There are several ways of attacking the above problem; the one here presented gives a good insight into what actually takes place.

The patient needs a plus 2.00 cyl. ax 90. Assume the normal eye has 60.00 D. of power in all meridians. This astigmatic eye has, therefore a power of 60.00 D. in the vertical meridian and of 58.00 D. in the horizontal meridian. We can imagine this eye as originally having a fundamental power of 58.00 D. all around, and that a plus 2.00 D. cyl. ax 180 was added to the eye (inside the eye) so as to produce the conditions mentioned. The vertical meridian is emmetropic (E), the horizontal meridian is hyperopic (H). If we now place a plus 2.00 cyl. ax 80 we can find the result of a combination of plus 2.00 cyl. ax 180 over a basically plus 58.00 diopter eye. This is a problem in obliquely crossed cylinder transposition.\*

The result of a plus 2.00 cyl. ax 180 = plus 2.00 cyl. ax 80 is a sphero-cylinder of plus 1.65 = + 0.70 cyl. ax 40. If this be superposed on the imagined original 58.00 D. eye we get plus 59.65 D. in meridian 40 degrees and plus 60.35 D. in meridian 130 degrees. Since the normal emmetropic eye, in our case, has a power of 60.00 D. the effect of the wrongly placed cylinder is to produce an equally *mixed* astigmatism along meridians which are different from the original principal meridians. The 40 degree meridian is 0.35 D. hyperopic and the 130 degree meridian is 0.35 D. myopic.

The patient will get retinal images consisting of diffusion circles corresponding to an error of about 1/3 diopter, (this depending on the individual eye and the chart used), then the patient's vision will not materially differ from what it would be if the cylinder axis were correctly placed. On the astigmatic line charts, the lines would all appear equally clear, or slightly blurred, but equally blurred. To bring out the presence of this mixed astigmatism, the eye has to be fogged, say, with a plus 0.50 D. sph. when the difference in the astigmatic line charts would be easily recognized. The resulting condition of a plus .50 D. fog would be to produce a condition in which the 40 degree meridian would be 0.15 D. myopic and the 130 degree meridian would be 0.85 D. myopic. The astigmatic dial line at 130 degrees would be definitely blacker and more distinct.

If a cross cylinder were used to check the axis (before the eye was fogged) the wrong position of the inserted cylinder would become immediately apparent. If a .25 cross cyl in placed with its handle along axis 80 (i.e., along the axis of the inserted cyl.), then the plus and minus power at 45 degrees to either side of the cylinder would correspond (very closely)

\*A simple method for solving transposition of obliquely crossed cylinders, graphically or by elementary calculations is shown in my book, "Studies in Visual Optics," C. V. Mosby Co., 1952.

to the principal meridians of the newly created mixed astigmatism. In one position plus cyl. ax 35 (-cyl. ax 125), the plus 0.25 D. power would be in the 125 degree meridian and make this meridian or meridian 130, about 0.60 D. myopic. The minus 0.25 D. power in the 35 degree meridian would make this meridian or meridian 40 degrees about 0.60 hyperopic. This would produce diffusion circles of  $0.60 \times 0.60$ .

In the second position the cross cylinder with plus cyl. ax 125 (-cyl. ax 35) would place the plus power in meridian 35 (or 40) and make this meridian about 0.10 D. hyperopic. It would place the minus power in meridian 125 (or 130) and make this meridian about 0.10 D. myopic. This would produce diffusion circles of  $0.10 \times 0.10$ . He would certainly see better with the latter, that is, when the cross cylinder is placed plus cyl. ax 125, (minus cyl. ax 35). This would show that the plus cylinder has to be turned from axis 80 towards 125, say to axis 90. A similar analysis can be made for correction with minus cylinders and for compound sphero-cylinders, plus or minus.

Say a patient needs a -2.00 cyl. ax 90, and a -2.00 cyl ax 80 is placed before the eye. What are the optical and visual effects of the cylinder off axis?

Again, let us assume that the normal emmetropic eye has a power of 60 D. in all meridians. Let us also assume that this eye has a fundamental power of 62.00 D. in all meridians and that a -2.00 cyl. ax 180 inside the eye produced a condition in which the vertical meridian is emmetropic, the horizontal meridian is 2.00 D. myopic. This eye needs for correction a -2.00 cyl, ax 90. If we place a -2.00 cyl. ax 80, we can figure out the effect on a 62.00 D. eye of a combination of -2.00 cyl. ax 180 = + 2.00 cyl. ax 80.

The combination of these two obliquely crossed cylinders by the graphic method or simple calculation method gives us -1.65 sph. = -0.70 cyl. ax 40. This gives in the 40 degree meridian -1.65 D. of power and in the 130 degree meridian 12.35 D. of power. This translated to the imaginary original eye with a 62 D. power in all

meridians gives us 0.35 D. myopia in the 40 degree meridian and 0.35 D. hyperopia in the 120 degree meridian. This condition now is one of equally mixed astigmatism, producing on the retina diffusion circles of  $0.35 \times 0.35$ .

The astigmatic line charts will look all alike. Fogging the eye with, say, a plus 0.50 D. S. will bring out the clearest line along the 40 degree meridian on the chart. The cross cylinder will show the wrong axis position in such cases without fogging. It can be shown in the same manner as was done for the plus cylinder that when the handle of the cross cylinder is at 80 (in line with the axis of the inserted trial cylinder) the position of the cross cylinder when the minus cylinder axis is at 125 degrees gives better vision than when the minus cylinder axis is at 35 degrees. This shows that the minus cylinder in the frame has to be turned towards 120 degrees to get the right axis, say, to position 90 degrees.

By constructing circles to represent the front of the eye, and inserting the meridians as mentioned, the reader will get an excellent visualization of the points discussed.

## SUMMARY

A method of analyzing the optical and visual effects of a cylinder placed off axis before the eye is shown. The effect of a plus or minus cylinder of the correct power but placed, say, 10 degrees off axis is to create a small amount of mixed astigmatism in meridians different from those of the original astigmatism. The new meridians vary in position depending upon several factors, but they are roughly 45 degrees (more or less) to either side of the inserted cylinder. Vision may be only slightly affected as the diffusion circles may come within the depth of focus of the eye. The effect on vision in general will depend upon the strength of the cylinder and the extent to which it is off the correct axis. The procedure for getting the correct axis by means of the cross-cylinder is discussed and illustrated.

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# "JUNIOR JOTTINGS"

by Sheldon Strauss

Semptember 21, 1959 found the class reconvening but this time assuming the cherished role as upperclassmen. Some of the more fortunate members were still clinging to their status as "bachelor" and then there were some who relinquished their holds this summer and took the vow. Newly married this summer were Don Safestern, Joe Donnatelle, and Paul Walcott. Those taking steps in the right direction, becoming engaged, were Bruce Brodsky to "Bobbie," Dick Glenn, Steve Chasin, and Tom Greenberg to "his little Margie B. I."

Not having to much material to elaborate upon, in the easy school year, let us delve into how the juniors busied themselves this summer.

Many varied and sundry vocations were undertaken by the more industrious members of the class during the summer. Inclusive of some of the fine position held by them were: Don Saferstein, selling door to door subscriptions to Optometric weekly; Joe Donnatelle, 30 day appointment for highway work for the State of Maine; Ed Trecartin, proof reader for the Daily Record-American; Guy LaBrosse, salesman for Fiat automobiles; Rick Kohlman, as a live-in companion for an insomnia sufferer. Paul White, troubleshooter for "Black Mike". Bob Nochimson, as an armed guard at a highway toll booth; Bruce Brodsky, as an understudy in the new Broadway smash hit, "The Snowman"; Dick "Ouch my feet" Glenn, pouring hot top roads; Bob Agranov, as a "Maitre D" in a Rhode Island resort; Ronny Tyroler, as a night watchman at Simmons College; Bob Kennedy, as a secretary at Alcoholics Anonymous; George Bournakel, as a short order cook at Cape Cod; Gerry Fay, manager of Slenderella inc. Tom Greenberg, as an elevator operator at a prominent Boston hotel (this job had its ups and downs); Vic Wolmer as a building consultant engineer, not a plumber; George Maguires as an insurance investigator;

Norm Garber giving driving lessons to neurotic old women, Sam Kornblatt giving driving lessons. Steve Chasin selling door to door subscriptions to Play Boy Magazine, and Bill Leporati, working for Gillette Razor Co. and yours truly, working for Old Mr. Boston Distilleries Inc., but quite unfortunately, not as a sampler of their product.

New officers for the coming year are: President, Paul White; Vice President, Bob Kennedy; Secretary, Ed Trecartin; Treasurer, Guy La Brosse; Class Representatives to Student Council, Ron Tyroler and Shel Strauss.

The Junior Class has a fine representation in the Student Council this year. In addition to Tyroler and Strauss, there is Chasin, White, Saferstein and Glenn.

The Junior Class is indebted to Ron Tyroler for briefing them three times a week on the happenings at the Student Council.

But the class is settling down to their task at hand, what with papers, reports, projects, etc., the Junior class have their hands full. But, with a rather abrupt ending, don't forget, pay your class dues!

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## NEW YORK STATE OPTOMETRISTS

This past summer M.C.O. had 50 practicing optometrist from New York State attending the O. D. program. According to an article in "The Western New York Optometrist" (official publication of the Western New York Society of Optometrists), the attendants were so favorably impressed with the facilities and instruction here that a scholarship Funds of \$500 was established. Of special interest to the men was the course on Remedial Reading which they feel helped them to acquire sufficient knowledge so that they will be able to talk to teachers, parents, and children about this problem and refer reading problem cases out when necessary. In general, the optometrists felt their ideas on optometry's role and scope were broadened by both the material given in the lectures and by the exchange of ideas in seminars.

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## SOPHOMORE SIDELIGHTS

by Bob Golden and Mel Nadelman

It doesn't seem possible, but almost two months have elapsed since the sophomore class gathered on a warm fall day to begin the second lap on our way to that coveted degree. For some of us it was our first year here. We knew no one but it didn't take long to become acquainted and friendly with everyone. Under the able leadership of our newly elected officers George Prevost, Jerry Boll and Carl Murphy; the ten of us, Chris McGlone, Benny Lambert, Herb Simons, Leon Rubinstein, Dick Stabile, Phil Friedman, Chuck Phillips, Tony Porco, Bob Golden and Mel Nadelman were soon felt to be an integral part of our class.

Things are slowly beginning to form a definite pattern. As one of our able faculty put it "You can't become confused because you don't know anything yet; wait a while." This is becoming very evident as the more we learn, the less we seem to know.

Our class is very active in extra curricular activities. Mike Gorman and Mike Consiglio are our representatives on the student council. On the basketball team were Bob North and Mike Gorman. In fact, Mike was high scorer and ace of the squad.

And now some impertinent questions on impertinent subjects. Would Bob North transfer if our ping pong table was removed from the cellar. How is Dean Martin doing since Dick Stabile decided to come to M.C.O.? How is Dixie doing since they have lost three of their finest sons; to M.C.O. Lambert, Norco and McGlone?

And now in closing, may we wish everyone in the class a lot of luck in their studies until we meet again in the next issue.

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The first meeting this year of the Massachusetts College of Optometry Alumni Association will be held at the Cafe Amalfi, Westland Avenue, Boston, on Wednesday evening, November 18. After dinner the group will have a talk delivered to them by Doctor Samuel Alperin on modern techniques in fitting contact lenses.

# OMEGA EPSILON PHI

by Al Foye

On October 14 Zeta chapter of Omega Epsilon Phi held its annual smoker at the Hotel New Brunswick. The turnout for the affair was excellent and the speakers gave the new students an insight into optometry.

Dr. Green gave the guests and brothers his views on fraternity functions at M.C.O. He then reminded the students that soon they would be out in the optometry field without the advantage of an instructor's shoulder to cry on, or advice to act upon. While the students were drinking in Dr. Green's word of wisdom he also managed to drink in amazing amounts of beer.

Dr. Hochstadt, who has missed only one smoker (due to illness) since he became faculty adviser, was present and he was amazed to see so many students smoking. Dr. Hochstadt requested that if the students were going to smoke, they should smoke the cigars (glad there were plenty). Dr. Hochstadt, who was made an honorary member of O EPhi at the International Convention held at the Statler-Hilton last year, told the new students some of the aims and good points of OE Phi. Dr. Hochstadt also extended an invitation to the students to talk to him about any problems they might encounter during their stay at M.C.O. Dr. Hochstadt received strong applause especially from the brothers of OE Phi, who, having been associated with the good Doctor for some time, appreciate his strenuous efforts in behalf of the fraternity.

Dr. Frederick Farnum spoke about the past, present, and future of Optometry and of the College. Dr. Farnum then told of the advances of contact lenses through the years and he gave an insight in the future of Optometry and Contact Lenses.

Dr. John Fiorentino, an alumnus and past president of OE Phi, then spoke of the alliance of the optometrist and physician especially in the medical centers which are becoming more and more prominent in the outlying suburbs of the larger cities. Dr. Fiorentino proved to be the comedian

of the evening and his continuous string of stories kept the smoker chuckling. Many of the brothers cornered Jack to gain more information about this associated type of practice (I think they were also trying to get some of Jack's jokes).

Mr. McDermmot made a brief appearance and made his presence felt with his Pat and Mike jokes.

For entertainment several fine sports films were shown (how about those fight films) and huge quantities of beer, cigars, cigarettes, and pretzels were consumed.

All through the evening the feeling of good will and friendship prevailed.

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## The Role of the Optometrist In Relation To Eye Diseases

by Joseph L. Pascal, M.A., O.D., M.D.

It is generally agreed that some 75% or more of all examinations for refractive and non-paralytic neuro-muscular are made by optometrists. Unquestionably a considerable number of those seeking optometric services suffer from some eye disease, in addition to, or quite apart from a refractive or neuro-muscular error. The optometrist is, in duty, bound to recognize the presence of some disease process in the eyes and refer the case to a medical specialist. It is for this reason that all optometry colleges have courses in ocular pathology and the recognition of eye diseases. The following is an attempt to give the student some broad background for his studies.

### Disease and the Reaction to Disease

All eye diseases, whether confined more or less to the eye, or being a manifestation of some disease process of the body as a whole, can be classified in one of these categories. These are: (1) Inflammatory Diseases. 2) Degenerative Diseases. 3) Destructive Diseases. Inflammatory diseases are those which arouse a reaction on the part of the body, that is, the body mobilizes its defenses to fight the disease. Remember, the inflammation is a reaction similar to fever. Here too the fever is not the disease but the reaction to the disease. This is the modern way of regarding inflammation and fever, but it has not always been thus, and there are still some who to this day see the inflammation and the fever as the essence of the disease process.

♦ Cont. on page 12

# TRIAL FRAME PHOROMETRY

by ROBERT J. McNULTY

An interesting problem is posed when phoria findings are needed during a house call refraction. Certainly, two findings with which it would be difficult to dispense are the distance and near horizontal phorias. The usual equipment needed for these tests are not, however, usual frame adjuncts. The Risley prisms are not easily adapted to a trial frame and the intense light source and controlled extraneous lighting needed for Maddox rod tests are difficult to achieve out of the Optometrists office.

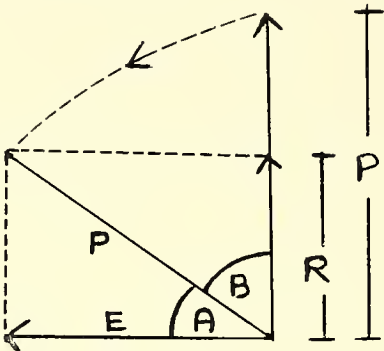
The following technique is one suggested by Dr. Green. It requires only one ten diopter prism for both dissociation and measurement, a simple table for converting from degrees to prism diopters, and an opaque fixation target. The principle is that as a prism is rotated from a position in which the base-apex line is absolutely vertical or horizontal, it gains a gradually increasing effect normal to its original direction while losing its power in the original direction.

For example, a prism placed base up before the right eye will, if rotated clockwise begin to have an increasing base in effect. If it is rotated counterclockwise will begin to have base out effect.



For a ten prism diopter prism, the effect is ten times the sine of the angle of rotation. Table I shows the degrees of

The prism diopter effect of this rotation can be computed simply by vector analysis:



$$\begin{aligned} \text{Cosine } A &= \frac{E}{P} \\ \text{or } E &= P (\cos A) \end{aligned}$$

- B = the angle of rotation
- P = the power of the prism
- E = the effect normal to the original direction
- R = the remaining effect in original position

rotation needed to achieve increments of one prism diopter. Table II shows the prismatic effect gained for every degrees of rotation.

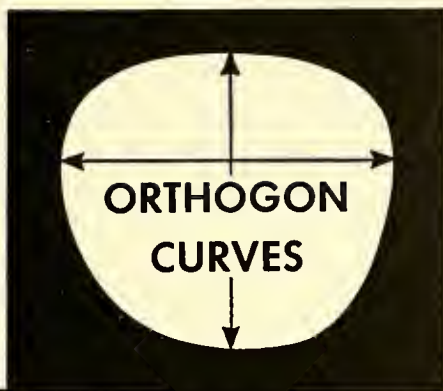
It can be seen that by keeping six prism diopters of vertical displacement, a max-

| I              |                  |
|----------------|------------------|
| Prism diopters | Degrees rotation |
| 0.5.....       | 3°               |
| 1.0.....       | 6°               |
| 3.0.....       | 12°              |
| 3.0..          | 17°              |
| 4.0.....       | 24°              |
| 5.0.....       | 30°              |
| 6.0.....       | 37°              |
| 7.0.....       | 44°              |
| 8.0.....       | 33°              |

Still 8 in  
original direction

Still 6 in  
original direction

| II               |                |
|------------------|----------------|
| Degrees rotation | Prism diopters |
| 5.....           | 0.8            |
| 10 .....         | 1.7            |
| 15.....          | 2.6            |
| 20.....          | 3.3            |
| 25.....          | 4.2            |
| 30 .....         | 5.0            |
| 35.....          | 5.7            |
| 40.....          | 6.4            |
| 45.....          | 7.1            |
| 50 .....         | 7.7            |



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imum of eight prism diopters of horizontal phoria can be measured. Also, in vertical phoria testing (at distance only), up to six prism diopters of imbalance can be measured with at least eight prism diopters of base in prism for dissociation.

The technique is as follows.

For horizontal phoria testing, place a ten prism diopter prism base up before the right eye. Determine the type of diplopia. If homonymous, add base out prism to measure by rotating the prism counterclockwise until the images are aligned vertically. The number of degrees of rotation needed can then be converted into prism diopters of esophoria. For heteronymous diplopia, rotate the prism in a clockwise direction. The test can be done at distance with a small spot and at near with the usual line of type.

For vertical phoria testing, the prism is set base in and then rotated counterclockwise if the right image is seen higher (L. hyperphoria) and clockwise if the right image is seen lower. The angular rotation required in this case will determine the amount of vertical phoria.

The question may arise as to the number of patients who can be successfully tested with the limited range of this device. *The Publications of the Bureau of Visual Science* shows that in surveys of over seven thousand cases, the mean average of the distance phorias was 0.08 prism diopters of esophoria and that the middle sixty-seven percent of these cases fell between three eso and three exo. At near, the mean average phoria was 4.38 prism diopters of exophoria. The extreme of the middle sixty-seven percent was out to ten diopter of exo. Even in these cases, a knowledge of the distance lateral phoria and the fact that the near lateral phoria was greater than eight diopters of exo would be better than no knowledge at all. Also, there are some patients who can be kept fusionfree with less than six prism diopters of vertical displacement.

In conclusion, the test has certain faults such as the extreme separation of the images by ten prism diopters of displacement and the usual aberration produced by such a strong prism before one eye. It is hoped, however, that its benefits outweigh these faults.

# The Role of the Optometrist In Relation To Eye Diseases

(Continued from page 9)

Are these archaic viewpoint only of academic interest? They are not; they have a very important bearing on the manner of treatment. There are drugs and physical agents which can subdue the inflammation and alay the fever. The unintelligent doctor looking on the inflammation and the fever as the essence of the disease will try to eliminate them. Not so the well informed doctor who sees in the inflammation and the fever the wholesome manifestation of the body's own defense mechanisms. He may try to control them, keep them within bounds, but he will not try to eliminate them.

## Fever as a Wholesome Reaction

Many years ago and old physician told me of a very sad experience in his first year of practice. He was called in to treat a child. The child had a high fever the cause of which he could not very well tell. But he realized that there was some deep seated infection somewhere to which the fever was a natural and wholesome reaction. The mother begged him, went down on her knees pleading, "Please stop that fever—my child is burning up." The doctor could not reason with her; he saw at once that to tell her the fever was a good reaction would mean nothing to her, so in desperation he said he could not treat the child, that he would send an older, more experienced doctor. The other doctor stopped the fever—results were fatal. Maybe the child would have died under any form of treatment, but the doctor who told me this felt otherwise and retain this as one of the sad memories of his career.

Such occurrences are probably very rare now. There is a general understanding of the role of fever in disease. In fact, fever is often artificially induced as a means of therapy. I am sure at least some of our readers must have heard of Dr. Wagner-Jauregg who received the Nobel prize in medicine in 1926. I met him in Vienna just before he died and still remember him as a gracious, scholarly gentleman. Dr. Wagner-Jauregg was a neuro-psychiatrist in charge of the neuro-psychiatric clinics in Vienna. As you probably know, syphilis in the third stage primarily affects the nervous system, producing tabes dorsalis, paralysis and so on. Unfortunately, the syphilitic toxins do not arouse a reaction of the part of the body and so the patients go from bad to worse. Now Dr. Wagner-Jauregg noticed that those neuro-syphilitics who had contracted malaria, which always arouses a fever reaction, were greatly benefited with regard to their syphilitic lesions. What happened was that the fever aroused to

fight the malaria germs fought at the same time all the other noxious elements in the body including the syphilitic toxins. He therefore introduced the malaria treatment for neuro-syphilis with highly gratifying result. For this he was awarded the Nobel prize. Since then fever therapy has been extended to many other domains of medicine. So much for the inflammatory and febrile diseases.

## Degenerative and Destructive Diseases

The second category of disease comprises the degenerative diseases. These do not arouse a fighting reaction on the part of the body and for that reason are even more vicious. Such diseases in the eye include retinitis pigmentosa, familial macular, degeneration, toxic amblyopia, in a sense chronic simple glaucoma, and so on. There has been some attempt made to differentiate between the inflammatory and the degenerative diseases by using a different suffix, "itis" to denote an inflammatory reaction such as conjunctivitis, iritis, etc. "Osis" to denote a degenerative process, e.g., "retinosis pigmentosa." Applied to other parts of the body, we have "nephritis" to denote an inflammatory disease of the kidneys and "Nephrosis" to denote a degenerative process in the kidneys. Another suffix, "pathy" such as arteriosclerotic retinopathy, is coming more and more into use to embrace both types of disease reaction.

The third type of disease entities include the destructive processes of the neoplasms. Here belong the various types of cancerous growths which invade different parts of the body and against which the body offers no effective resistance. In the eye melano-sarcoma and glioma of the retina are illustrative examples.

## Recognition vs. Diagnosis of Disease

Optometrists are required to, and do, study recognition of disease. Now and then some continue their studies for the purpose of acquiring the ability to make a differential diagnosis. However, the former only is to ledge, diagnosis a luxury knowledge. If a be stressed. Recognition it necessary know-patient comes to you and you detect early pathology and refer the patient to the physician for diagnosis and treatment you will have rendered a service to your patient and will have earned the respect of the physician. If you miss recognition of early pathology, you fail your patient and you will get little credit from your physician, no matter how well versed you are in differential diagnosis.

Optometrists are in an excellent position to recognize incipient abnormalities because they see so many normal eyes. Only by seeing a great variety of normal condition can one detect early the abnormal condition.



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